should be tested. Only when independence of observation and thought had been secured by the pioneers of modern science was progress possible. Any race which places the wisdom of its early fathers above the work of its sons, which regards past knowledge as sufficient for future salvation, must remain stagnant. Mr. G. G. Chisholm accurately expresses the application of this fact to China in the "International Geography" in the following words:—

> "All Chinese institutions concur in impressing on the people respect for authority and the established order. None is more influential in this respect than the system of examination, for all the examinations test merely the knowledge of the ancient Chinese classics first systematised by Confucius, and give no encouragement to the spirit of independent inquiry."

It would be easy to select numerous other points from Dr. Keltie's book for description or comment. The six chapters in the volume deal respectively with general considerations, geography applied to commerce, the geography of Africa in its bearings on the development of the continent, the British Empire, some common commodities, and the unstaked or unexplored parts of the earth. Each chapter is rich in information, and the style of the whole work is far removed from that of books in general on commercial geography. Our only regret is that a book which embodies so many facts of importance should be published without an index.

QUAIN'S ANATOMY.

Quain's Elements of Anatomy. Edited by Prof. E. A. Schäfer, F.R.S., Prof. J. Symington, F.R.S., and Dr. T. H. Bryce. In four vols. Vol. i., Embryology. Eleventh edition, by T. H. Bryce. Pp. viii+275. Price 10*s*. 6*d*. net. Vol. iii., Neurology. By Prof. E. A. Schäfer, F.R.S., and Prof. J. Symington, F.R.S. Part i., containing the General Structure of the Nervous System and the Structure of the Brain and Spinal Cord. Price 15*s*. (London: Longmans, Green and Co., 1908.)

WHEN in 1828 Jones Quain, "Lecturer in the Medical School, Aldersgate Street," published, as a modest volume, the first edition of his "Elements of Anatomy," he could scarcely have hoped that eighty years later it would still remain the standard work of its kind in the English language, and that it would take and keep a place as a cosmopolitan textbook; and yet if the truth must be told, very little of Quain remains in the work which now passes under his name. In the original edition a chapter of some 4000 words told the story of the development of the human body; now, in the eleventh edition, embryology requires a special editor and a special volume containing more than 100,000 words and considerably more than 300 illustrations.

The new edition is marked by a number of changes, some of them of considerable magnitude. Chief amongst these is the change in the editorial staff, and it will be with very sincere regret that anatomists, not only in England, but in every country, will see that Prof. George Dancer Thane's name no longer appears on the title-page. In width and accuracy of anatomical knowledge, in clearness of statement and draughtsmanship, he has no compeer amongst present-day anatomists. Dr. T. H. Bryce, lecturer in anatomy in Queen Margaret College, Glasgow, has joined the editorial staff, replacing Prof. Schäfer as editor of the volume dealing with embryology. The present edition is to appear in four volumes, of which the volume by Dr. Bryce, containing the embryology, is the first; general and visceral anatomy will constitute a second, the nervous system and sense organs a third, the remaining subjects being grouped together in a fourth volume. It is to be hoped that, as in the last edition, each of these remaining volumes will be issued in separate parts, for big volumes are very inconvenient for reference and use. In the present edition the "general introduction" has been wisely omitted, for it shared the character of nearly all introductory chapters in being unintelligible until the whole contents of the work had been mastered and appreciated by the student. It is also to be hoped that the precedent set by the present volume of referring readers to foreign text-books for the literature of the subjects dealt with is not to be followed in the other volumes, although it must be admitted that Dr. Bryce does supply references to important papers of more recent date.

In preparing a new edition of "Embryology," Dr. Bryce's task was not an easy one, and he has done it well. In the eighteen years which have elapsed since the last edition was published there has been a remarkable extension in every phase of our knowledge of the development of the human body. Especially is this true of the early stages in the development of the human embryo and of its attachment to the uterus. The ova described by Leopold, Peters, Beneke, and Graf v. Spee, represent earlier stages than were known when the last edition was published, and it is not improbable that the specimen described by Drs. Bryce and Teacher since the present edition was ready for publication represents a younger stage of the human embryo than has been hitherto seen. Our conception of the manner in which the ovum becomes embedded in, and attached to, the uterus has undergone a complete revolution. The elaborate changes undergone by the nucleus of the cell, especially those nuclear changes which preceed the formation of genital cells, have been recently investigated by a large army of workers, a line of research, if one may judge from the space here devoted to it, with which Dr. Bryce has a particular sympathy. On the other hand, later stages of development are dealt with very meagrely, and the descriptions of the origin of such organs as the lungs and prostate are far too slight to be of real use. It is strange, too, that a book which is primarily intended for medical men should provide so imperfect an explanation of the many malformations to which the various parts of the human body are liable.

A study of the text makes it very evident that Dr. Bryce has regarded a full and accurate description

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of observed and verified fact as the chief duty of the editor of a work such as Quain, but however much one may applaud his aim it cannot be said that his style is a happy one for descriptive purposes. The following instance may be selected from p. 251, and it is by no means an isolated example :—

> "The formation of the vertebral body is brought about as follows: the notochordal sheath becomes prolonged dorso-ventrally into a kind of septum, which extends between the primitive plates and separates the loose mesenchyme, alluded to above, into a right and left moiety; at the same time the superficial layers of the intervening tissue become condensed into a continuous lamella uniting the plates and enclosing the looser tissue on each side of the septum. This enclosed tissue now becomes converted into cartilage. There are necessarily at first two chondrogenetic centres, but soon the septum becomes implicated, and the notochord is enclosed in a continuous cartilaginous ring."

Now the body of a vertebra is a very simple thing, but the reviewer, after reading and re-reading Dr. Bryce's description, has been unable to obtain a mental picture of how it is formed, and most students will find the same difficulty. The first essential of a descriptive text is that it must be clear and simple, and very frequently Dr. Bryce's text has neither of these merits. As regards the interpretation of fact and statement of theory, the editor has rightly assumed an impersonal and non-committal attitude; he leaves the reader free to make his own choice. He has given an impartial representation of the work and theories of most embryologists, with one exception; in describing the origin of primitive sex cells, not a word is mentioned of the arduous and pioneer work of Dr. Beard, of Edinburgh.

A large number of new illustrations have been added, many of those by Dr. Bryce, such as Fig. 136, showing a stage in the development of the nerve roots, being of real merit, but on the other hand it must be admitted that the illustrations prepared from photographs of sections of the embryo and fœtus are almost of no value whatsoever, for it is only the expert who can make any use of such sections, and these they have already by the score in their store cupboards. In exercising the rights of a reviewer, perhaps the many merits of this new edition have been sacrificed to an enumeration of what the reviewer regards as demerits, and it is only just to Dr. Bryce to mention in conclusion that the former far outweigh the latter.

In part i. of vol. iii. Profs. Schäfer and Symington have produced a standard work on the structure of the central nervous system. The combination of physiologist and anatomist has had the happiest result, securing at once an authoritative representation of what is known of the finer structure as well as the gross anatomy of the brain and spinal cord. The volume is richly and wisely illustrated, many of the new figures by Prof. Symington being of great merit. One has only to compare it with the corresponding volume of the last edition to realise the extraordinary progress that has been made during the last fifteen years in every part of our knowledge of the brain.

A. K.

NATURAL AND SYNTHETIC CAMPHOR.

La Canfora Italiana. By Prof. Italo Giglioli. Pp. 292. (Rome: Tipografia Nazionale di Giovanni Bertero e. C., 1908.)

THE commercial production of camphor is, at the present time, in a very interesting phase. The true camphor tree, *Cinnamomum camphora*, one of the Lauraceæ, occurs wild in eastern Asia, Formosa and Japan yielding the greater portion of the world's supply. After the Chino-Japanese War, the Japanese, by the acquisition of Formosa, gained the practical control of the total output, and camphor production was made a Government monopoly, first in Formosa, but afterwards in Japan as well. Within a short space of time camphor rose enormously in price, causing serious concern in the industries employing camphor, particularly the manufacture of celluloid, which uses up the greater portion of the world's supply.

This condition of affairs, and the possibility, as a further development, that celluloid manufacture might also become a Japanese monopoly, gave a great impetus to research with the object of preparing camphor artificially or of finding some efficient substitute. The chemists proved equal to the occasion, and camphor was prepared synthetically by using turpentine oil as a raw material, the successive products in one of the processes being the terpene pinene, pinene-hydrochloride, camphene, bornyl acetate, borneol, and finally crude camphor, which, when refined, yields camphor identical in all its properties with the natural product except that it is optically inactive, a difference, however, of no economic importance.

Not only has the synthesis of camphor been successfully accomplished, but the synthetic camphor can be prepared at a sufficiently low price to enable it to be a formidable competitor to the natural product, and it is at present a moot point as to whether the natural or artificial camphor can be produced the more cheaply. Natural camphor in the past was obtained by the destructive method of felling mature trees, cutting up the wood into chips, and subjecting these to distillation. The experiments carried out during recent years at the Royal Botanic Gardens, Ceylon, and elsewhere have shown that this is not essential, and that camphor can be obtained from the young twigs and shoots, and it is possible that by coppicing the plant instead of allowing it to assume its normal tree habit much greater yields can be obtained per acre, and the cost of production considerably reduced. Synthetic camphor, on the other hand, unless other large supplies of suitable hydrocarbons become available, will remain dependent on turpentine oil, which during recent years has shown a tendency to increase in price.

The Japanese monopoly not only encouraged researches aiming at the artificial production of camphor, but also gave a stimulus to the cultivation of the tree in other countries, the work in Ceylon already referred to being a case in point. Prof. Giglioli, in the volume under review, deals with this aspect of the question as regards Italy. Many people, asso-

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